

Minidoka County Alluvial Aquifer Regional Project Pesticide Detections and Idaho's Pesticide Management Plan

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This fact sheet summarizes pesticide detections in ground water found by the Idaho State Department of Agriculture (ISDA) in the Minidoka County Alluvial Aquifer regional project, which covers the southern portion of Minidoka County in south-central Idaho (Figure 1). The Minidoka County Alluvial Aquifer regional project began in 1997 as a result of previous monitoring by the United States Department of Agriculture (USDA) and the United States Geological Survey (USGS).

The Minidoka County Alluvial Aquifer regional project encompasses an area approximately 16 miles wide and 10 miles long. The project area is adjacent to the Snake River and is primarily irrigated agriculture. The main source of irrigation is provided by surface water diverted from the Snake River (Rupert, 1997). Local irrigation practices include both flood and sprinkler irrigation. Major crops in the area include potatoes, sugar beets, wheat, barley, alfalfa hay, corn and beans (USDA National Agricultural Statistics Service, 2009).

Geologic cross sections of the project area suggest the alluvial aquifer may be partially perched on top of clay layers, that separate the shallow alluvial aquifer from the deeper regional basalt aquifer (Atlakson and Carlson, 2008). The unconsolidated alluvial deposits of sand and gravel extend to a depth of 200 to 250 feet below land surface and are underlain by basalt. The majority of the alluvial aquifer is composed of sands and gravels deposited by streams and the Snake River (Rupert, 1997). Recharge to the aquifer is mainly from infiltration of irrigation water, with some shallow wells going dry after the end of the irrigation season (Rupert, 1997). The typical depth to ground water is less than 100 feet and, in some areas, is as little as 4 feet below land surface, based on well driller's reports from domestic wells in the project area (Atlakson and Carlson, 2008).

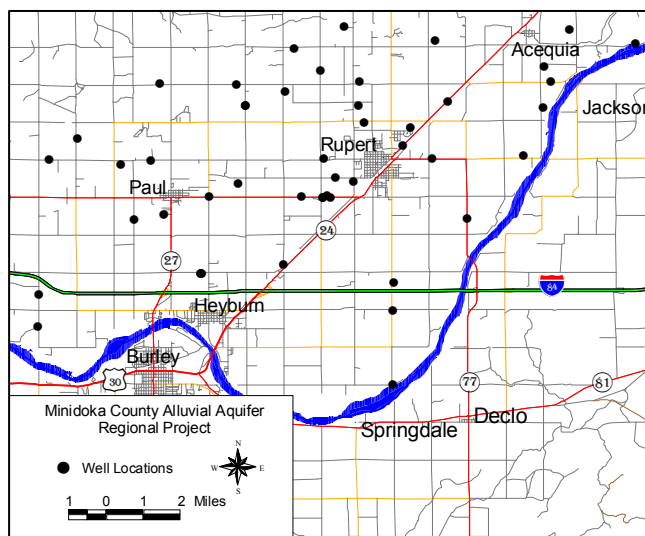


Figure 2. Location of project wells.

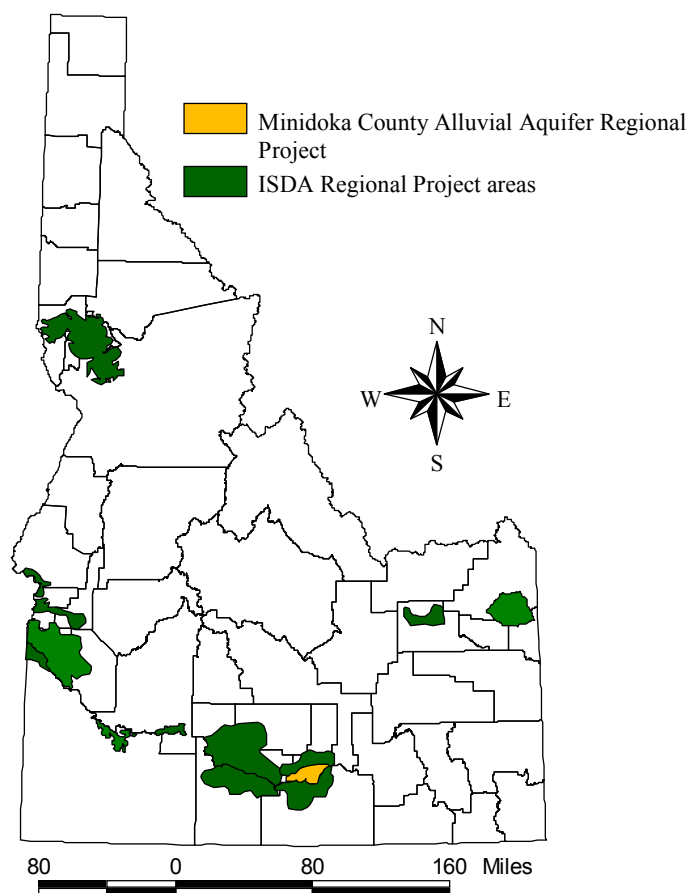


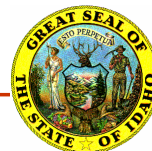
Figure 1. Location of Minidoka County Alluvial Aquifer regional project and other ISDA regional project areas.

To establish this regional monitoring project, the ISDA randomly selected domestic wells in the area. ISDA statistically determined that sampling 45 randomly selected domestic wells would provide adequate data to evaluate overall ground water quality (Figure 2). All sampling was conducted after a quality assurance project plan (QAPP) was established. Permission was gained from the land owners prior to sampling.

Nutrients, pesticides, and common ions were evaluated during the 12 years (1997 through 2008) of ISDA's testing. Laboratory results indicate several domestic wells located west of Heyburn and the area surrounding Paul and Rupert have $\text{NO}_3\text{-N}$ values that suggest some type of land use influences on the ground water. In addition, low level concentrations of various pesticides were detected in numerous wells.



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2008 ISDA Pesticide Detections

In 2008, a total of 42 wells were sampled for pesticides; 15 wells had one or more pesticide detections (Figure 3). The most frequently detected pesticides were atrazine and desethyl atrazine (DEA), a breakdown product of atrazine, which were detected in six wells each. The next most commonly detected pesticides were diuron with detections in three wells and hexazinone with detections in two wells. Bentazon, bromacil, the atrazine breakdown product deisopropyl atrazine (DIA), metribuzin, prometon and simazine were each detected once. All detections were below any health standards set by the EPA or the state of Idaho. All detections were defined as Level 1 detections based on the Idaho PMP.

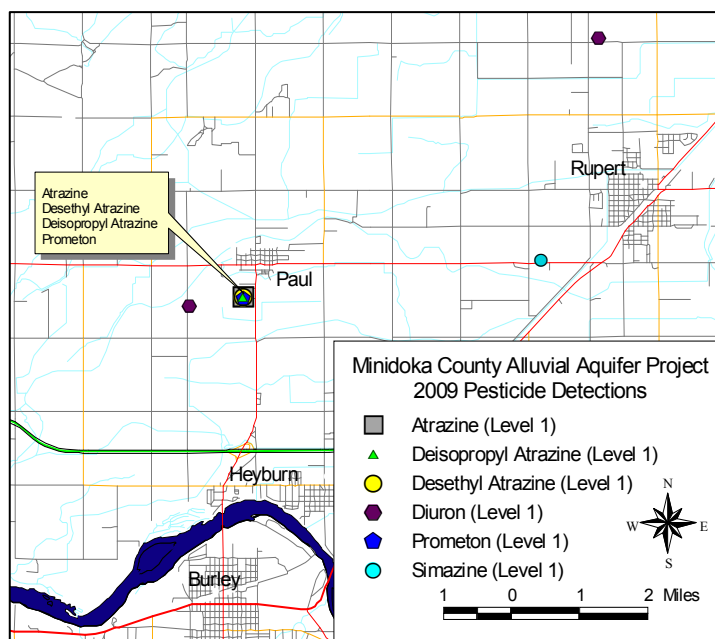


Figure 4. Pesticide detections from 2009 sampling.

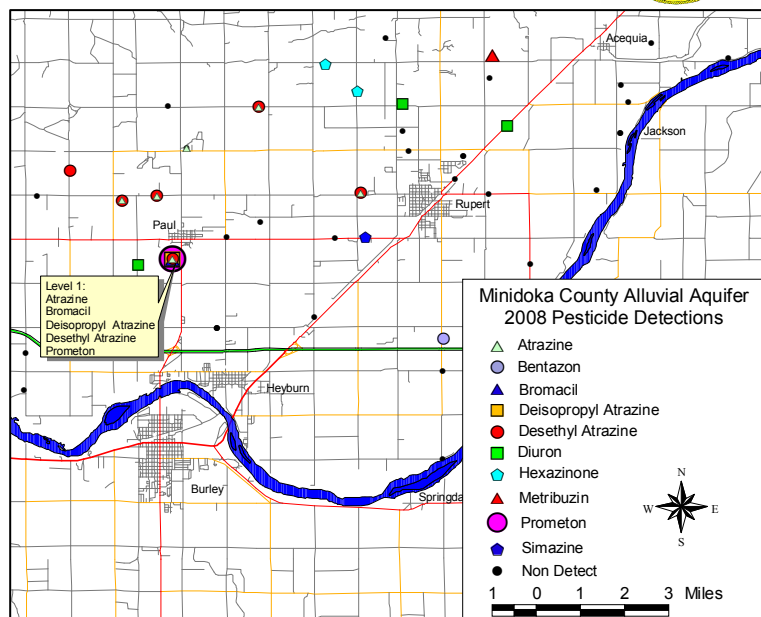


Figure 3. Pesticide detections from 2008 sampling.

2009 ISDA Pesticide Detections

In 2009, 4 wells in the regional project were tested for pesticides as follow up to previous detections. The pesticides detected were atrazine, DIA, DEA, diuron, prometon, and simazine (Figure 4). All detections were below any health-based standards set by the EPA or the State of Idaho and are defined as Level 1 detections based on the Idaho PMP.

Before using any pesticide,



READ, AND FOLLOW THE LABEL!

Idaho Pesticide Management Plan (PMP)

The Idaho State Department of Agriculture (ISDA) is the lead agency in developing the *Idaho Pesticide Management Plan (PMP) for Ground Water Protection*. ISDA has the authority to implement pesticide programs through a cooperative working agreement with the Environmental Protection Agency (EPA), Idaho state laws, and department rules. The Idaho PMP outlines processes to protect ground water from pesticides and defines pesticide detections based on the concentration of the detection compared to a reference point. The reference point refers to health based concentrations. Idaho has adopted the EPA's Maximum Contaminant Levels (MCLs) in the Idaho Ground Water Quality Rule (1997). Where no MCL exists, ISDA will use EPA Lifetime Health Advisories (HAL) first if they exist, and then an EPA Reference Dose (RfD) number.

The PMP categorizes detection levels into the following levels:

Level 1: Detection above the detection limit to less than 20% of Reference Point.

Level 2: Detection at 20% to less than 50% of Reference Point.

Level 3: Detection at 50% to less than 100% of Reference Point

Level 4: Detection equal to or greater than 100% of Reference Point.

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Atlakson, J. and R. Carlson, 2008. Ground Water Quality of Minidoka County Alluvial Aquifer, 1997-2007. Idaho State Department of Agriculture Technical Results Summary #38.

Rupert, M.G., 1997. Nitrate (NO₂+NO₃-N) in Ground Water of the Upper Snake River Basin, Idaho and Western Wyoming, 1991-95. U.S. Geological Survey, pp. 8-30.

United States Department of Agriculture (USDA), National Agricultural Statistics Service, Idaho Field Office, 2009. 2009 Idaho Agricultural Statistics...including Idaho State Department of Agriculture's Annual Report, pp. 36-59.